We Claim:

1. A method of validating the flow calibration factor of a Coriolis flowmeter adapted to process a material flow; said method comprising the steps of:

defining a reference density at a reference temperature of said material flow;

measuring a line density and line temperature of said material flow; and

comparing said reference density to said line density when said line temperature corresponds to said reference temperature.

2. The method of claim 1 wherein said step of measuring comprises the further steps of:

defining upper and lower limits of values of said temperature compensated reference density;

determining whether each generated temperature compensated reference density is within said limits; and

continuing said measurement when said temperature compensated reference density is within said limits.

3. The method of claim 1 or 2 wherein said steps of measuring further comprises the steps of:

measuring said line density only when said line temperature equals said reference temperature;

recording said temperature compensated reference density representing said density when said line temperature equals said reference temperature.

4. The method of claim 2 wherein said reference temperature is between the limits of variations of said line temperature.

5. The method of claim 2 characterised in that said method further comprises the step of generating an error signal upon the detection of a temperature compensated reference density exceeding said limits.

6. The method of any of claims 1-5 characterised in that said method further comprises the steps of:

successively measure the line pressure of said material flow;

determining a density/pressure compensation factor for said material flow;

compensating said temperature compensated reference density using said density/pressure compensation factor to derive a pressure and temperature compensated reference density; and

using said pressure and temperature compensated reference density in determining said flow calibration factor of said Coriolis flowmeter.

7. The method of claim 6 wherein said density/ pressure compensation factor is formed by the steps of:

determining the ratio of changes in density to changes in pressure;

determining in the pressure difference between said line pressure and said reference pressure; and

multiplying said ratio by said pressure difference to obtain said pressure compensation factor.

8. The method of any of claims 2-7 wherein said limits further define upper and lower limits for variations in said pressure and temperature compensated reference density.

9. The method of any of claims 1-5 characterised in that said method further comprises the steps of:

successively measuring the material composition of said material flow;

determining a material composition compensation factor for the density of said material flow;

compensating said temperature compensated reference density using said material composition compensation factor to derive a material composition and pressure and temperature compensated reference density; and

using material composition and said pressure and said temperature compensated reference density in validating said flow calibration factor of said Coriolis flowmeter.

10. The method of any of claim 9 wherein said limits further define upper and lower limits for variations in said material composition and said pressure and temperature compensated reference density.

11. The method of claim 1 including the further steps of:

forming a data structure containing density values of said material flow for a range of line temperatures and reference temperatures;

applying the line temperature and line density to said structure in response to each measurement;

and reading out said data structure to obtain a temperature compensated reference density for said reference temperature.

12. The method of claim 11 wherein said data structures contains information relating values of material pressure to said density values for a range of line temperatures and reference temperatures;

said method includes the further steps of:

applying the line temperature and line density and pressure to said structure in response to each measurement;

and reading out said data structure to obtain a pressure and temperature compensated reference density for said reference temperature.

13. The method of claims 11 or12 wherein said data structure contains information relating values of material composition and material pressure to said density values for a range of line temperatures and reference temperatures;

said method includes the further steps of:

applying the material composition and line temperature and line density and pressure to said structure in response to each reading;

and reading out said data structure to obtain a material composition, pressure and temperature compensated reference density for said reference temperature.

14. A software product adapted to calibrate a Coriolis flowmeter, said soft product comprising:

a media configured to store instructions;

a processing system configured to read said instructions from said media;

said instructions configured to direct said processing system to execute the steps of:

defining a reference temperature of a material flow processed by said Coriolis flowmeter;

successively measuring the line density and line temperature of said material flow;

generating a compensated density for said reference temperature in response to each measurement; and

validating a flow calibration factor of said Coriolis flowmeter using said generated temperature compensated reference density.

15. The software product of claim 14 characterized in that said media is configured to store instructions configured to direct said processing system to execute the further steps of:

measuring said line density only when said line temperature equals said reference temperature;

recording said temperature compensated reference density representing said density when said line temperature equals said reference temperature.

16. The software product of claim 14 characterized in that said media is configured to store instructions configured to direct said processing system to execute the further steps of:

forming a data structure containing density values of said material flow for a range of line temperatures and reference temperatures;

applying the line temperature and line density to said structure in response to each reading;

and reading out said data structure to obtain a temperature compensated reference density for said reference temperature.